Sami Melhem

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OBJECTIVE

Computer Science undergraduate with 4+ years of experience in machine learning, data analysis, and software development, seeking internships for data scientist/machine learning engineer roles.

EDUCATION

Master of Computer Science — **May 2027**
Texas A&M University — *College Station, TX*
- **GPA: 4.0**

Computer Science, Bachelor of Science — **May 2026**
Texas A&M University — *College Station, TX*
- **GPA: 3.8**

SKILLS

Languages	Python, SQL, JavaScript, HTML, CSS, C++, Java, Go, Rust, R
Frameworks	React.js, Node.js, TypeScript, Next.js, Express.js, Flask, Dash, Django, Spring Boot
Data Science	Pandas, Scikit-learn, TensorFlow, PyTorch, NumPy, Matplotlib, Plotly, OpenCV
AI/ML	Multi-Agent Systems, LLM Architecture Development, Model Optimization, NLP
Tools	Git, Docker, Postman, Electron, Selenium, Vercel, Vite, Axios, RESTful APIs
Dashboards	Power BI, Tableau, Excel, Displayr, Voxco
IDEs	Visual Studio Code, PyCharm, IntelliJ, Visual Studio, Cursor, Bolt.new, Chef
Databases	AWS, GCP, Azure, MySQL, PostgreSQL, NoSQL, Salesforce, Convex, Linux, IPFS
Methodologies	Agile, Waterfall, Scrum, Jira, A/B Testing, Feature Engineering, Statistical Modeling

EXPERIENCE

Momentum Technologies Inc. — **June 2025 – Present**
R&D/ML Intern — *Carrollton, TX*
- Developing Physics-Informed Neural Networks (PINNs) to optimize metal precipitation processes in extraction systems.
- Implementing custom machine learning algorithms that reduce computational resources while maintaining model accuracy.
- Collaborating with R&D chemists to turn domain expertise into effective ML model constraints and evaluation metrics.

Texas A&M University & Soft Interaction Lab — **March 2025 – Present**
Conversational AI Developer — *College Station, TX*
- Developed conversational AI tools used by 500+ SANE nurses at Texas A&M Medical School, allowing them to practice against virtual patients and get feedback on their interactions.
- Collaborated with a cross-functional team of VR/AR developers, designers, and stakeholders, which demonstrated a startup product development cycle.
- Enhanced conversational accuracy between patient and user, and improved user satisfaction metrics by 30% through interactive NLP model optimization and user feedback.

PitchFact — **February 2025 – May 2025**
Data Engineer (Business Operations) — *College Station, TX*
- Built an ML/LLM pipeline processing 500+ PDFs weekly, cutting screening time by 40% across all startups that are reviewed and interviewed.
- Designed a scoring system with 10+ metrics to boost startup evaluation accuracy that allowed for in-depth analysis across all public and private documents on the startup.
- Automated client folder generation, improving interview scheduling efficiency by 25%, allowing for more startups to become our clients.

Algoverse   **November 2024 – February 2025**

Machine Learning Researcher   *Austin, TX*

- Developing the LLM Agent City Navigation Benchmark, integrating frameworks like Perceive-Reflect-Plan and ReAct to evaluate human-like navigation strategies across dynamic urban environments.
- Utilized Toolformer for adaptive real-time navigation insights, achieving 20% improvement in task success rates compared to existing benchmarks.
- Designed experimental protocols combining simulated environments (UrbanSim) and real-world datasets (CityNav) to test efficiency, accuracy, and human-similarity metrics.

Department of Computer Science & Engineering   **August 2024 – December 2024**

Undergraduate Teaching Assistant (CSCE 221 under Dr. Leyk)   *College Station, TX*

- Led Data Structures and Algorithms lab sessions for over 200 students, providing hands-on guidance in Python and C++ to enhance their problem-solving and programming skills.
- Facilitated debugging workshops, helping students identify and resolve complex issues in their code while promoting efficient coding practices and a deeper understanding of algorithms.
- Contributed to curriculum development by designing engaging assignments and projects, resulting in improved student engagement and retention across the course.

INTERA Incorporated   **May 2024 – August 2024**

Data Science Intern   *Austin, TX*

- Created machine learning models to predict environmental impact metrics, achieving a 30% improvement in model accuracy and helping clients make informed decisions aligned with government guidelines.
- Streamlined data processing workflows with Python, SQL, and ETL tools, cutting processing times by 20% while maintaining data integrity and accuracy for real-time analysis.
- Designed and developed interactive Tableau dashboards to visualize key trends and insights, effectively communicating findings to both technical and non-technical stakeholders.

Pivotal Research Inc.   **May 2024 – July 2024**

Data Science Intern   *Edmonton, Alberta*

- Designed and implemented data pipelines capable of handling over 1 million daily transactions, resulting in a 25% performance improvement and ensuring scalability for future growth.
- Collaborated with cross-functional teams to build machine learning models utilizing object-oriented programming, enabling large-scale data analysis and predictive capabilities.
- Performed statistical analysis using Python and SQL, enhancing decision-making processes by providing actionable insights and recommendations to stakeholders.

INTERA Incorporated   **May 2023 – August 2023**

Data Engineering Intern   *Austin, TX*

- Automated data extraction and transformation processes using Python, reducing data acquisition time by 30% and enabling more efficient analysis workflows for environmental impact studies.
- Developed scalable data models in MySQL to ensure data integrity and accessibility, allowing seamless collaboration across multiple departments and improving reporting efficiency.
- Collaborated with data scientists and engineers to design and implement supply chain automation models, contributing to the delivery of actionable insights to over 100 clients in Texas and California.

Projects

SaveGas   **April 2025 – May 2025**

- Developed a real-time gas price tracking application that helps users save an average of $0.15-$0.30 per gallon by comparing prices across multiple stations, featuring an interactive map interface with turn-by-turn navigation to the selection station.
- Implemented a secure authentication system with location-based services that proicesses over 100+ gas station data points in real-time, enabling users to make informed decisions about fuel purchases while maintaining strict privacy standards.
- Optimized API calls from a 60-second refresh cooldown system that provides up-to-date pricing information, resulting in a seamless user experience across both desktop and mobile devices.

Exped Browser   **January 2025 – April 2025**

- Built an Electron desktop application that successfully handles 10,000+ concurrent users across Apple, Windows, and Linux operating systems.

- Reduced user navigation time by 40% through comprehensive keyboard shortcuts, while achieving a 95% user satisfaction rate based on email feedback system metrics.
- Implemented a privacy-focused browsing experience with local AI-powered page summarization that reduced reading time by 50% for users, while maintaining 100% data privacy through local processing and accurately summarization web content.

Project Manager Streamlined Proposal System   **December 2024 – January 2025**
- Leading the development of a full-stack application for managing projects in ADSC (Aggie Data Science Club), the largest Data Science club on campus.
- Designing a system where Project Managers (PMs) can submit project proposals, undergo interviews for approval, and manage member applications based on their top 5 project choices.

Autonomous Vehicle Simulation   **August 2024 – December 2024**
- Built autonomous vehicles using CARLA simulator, integrating LiDAR/Camera sensors for real-time object detection with over 80% accuracy across vehicle classes.
- Developed navigation algorithms like A*, RRT, and IDA for optimal pathfinding, supported by data visualizations in Tableau and Power BI.
- Implemented decision-making ML models (e.g., Faster R-CNN, YOLO) using PyTorch and TensorFlow, improving vehicle navigation precision by 25%.

Panda Express POS System   **October 2024 – December 2024**
- Developed a full-stack POS system with role-based access control for cashiers, managers, and customers, leveraging React.js, Node.js, and PostgreSQL.
- Integrated real-time weather API to enable dynamic theming (day/night modes) and enhance user experience for over 50 active users.
- Implemented secure login and order management functionality, reducing cashier processing time by 30% through a responsive and intuitive interface.

Financial Modeling Tool   **June 2024 – August 2024**
- Developed a Python-based financial modeling tool utilizing machine learning algorithms, achieving over 80% forecasting accuracy for stock price and revenue predictions.
- Built and optimized an object-oriented backend to handle high-volume data ingestion, ensuring scalability and reliability for financial analysts and investors.
- Designed interactive data visualizations with Dash, Matplotlib, and Plotly to present complex financial trends in a digestible format.

Theo – The Campus Tutor Listing App   **May 2024 – June 2024**
- Created a peer tutoring app used by over 1,000 students, providing a seamless platform for managing tutoring sessions and connecting students with available tutors.
- Optimized backend queries using SQL to reduce data retrieval times by 40%, significantly improving the user experience for high-demand search functions.
- Deployed the app on a cloud infrastructure capable of supporting over 10,000 active users, ensuring reliable performance and scalability during peak usage periods.

Client-Server Process Communication System   **March 2024 – April 2024**
- Designed and implemented a Linux-based client-server communication system using C and socket programming, achieving a 30% improvement in data transmission efficiency.
- Developed robust communication protocols via HTTP to support the handling of 1 million concurrent connections, ensuring reliability and scalability in real-time embedded environments.
- Integrated low-level system calls and networking principles to replicate real-world use cases, demonstrating practical knowledge of system-level programming and network communications.

Class Primer   **February 2024 – April 2024**
- Created a custom GPT bot called "Class Primer" to help students prepare for courses by generating personalized "primers" weeks before classes start, integrating the "Priming" method.
- Featured in an interview for the "AI x Education" newsletter of over 10,000+ educators, showcasing how AI tools can enhance educational outcomes.
- Presented "Class Primer" to the graduate class BADM 554 at the University of Illinois Urbana-Champaign of a class size of 100, focusing on AI's transformative role in education.

Awards

- **Michael 78 & Dianne 79 Pfister Endowed Scholar** - 2024-2025
- **Best Juniors at ACPC Competition** - Spring 2025
- **Distinguished Student** - Fall 2024

Relevant Coursework

Data Science: Principles of Data Science, Computational Data Science, Machine Learning, Artificial Intelligence, Information Storage & Retrieval, Data Visualization, Database Systems
Computer Science: Data Structures & Algorithms, Software Engineering, Cloud Computing, Analysis of Algorithms, Computer Systems, Computer Architecture
Mathematics: Differential Equations, Linear Algebra, Calculus III, Discrete Mathematics, Cryptography

Extracurriculars

- **Aggie Data Science Club** - 2024-2025 Projects Officer, and 2024-2025 Project Manager for TAMU's largest data science and machine learning organization, which hosts company talks, workshops, socials, challenges, semester projects, and community service events.
- **Carnival of Animals** - 2025 Vice President, 2024 Treasurer, and 2024 Secretary for TAMU's largest gig musician organization, which hosts gig opportunities, musician masterclasses, jam sessions, rehearsals, socials, and community service events.
- **TAMU Chamber Orchestra** - Principals Clarinet for TAMU's best orchestra, which performs 2 concerts a year and mentors young musicians every semester.
- **TAMU Wind Symphony** - Concertmaster and Principal Clarinet for TAMU's best symphony, which performs 3 concerts a semester and traveled to Spain to perform concerts across the country.
- **Aggie Coding Club** - Member of a computer science organization that holds company talks, socials, and workshops in different web and data science technologies.
- **Aggie Competitive Programming Club** - Member of a computer science organization that holds breakdown analysis of different coding problems that show up in interviews and real-world applications.
- **Engineering Inc.** - Member of an entrepreneurial community that holds startup talks and socials in engineering entrepreneurship.

Leadership

Vice President   **January 2024 – Present**
Carnival of Animals (COA)   *College Station, TX*

- Managed a **$2000 budget** and authorized contracts for over **50** performances at churches, weddings, and exclusive venues.
- Organized and led weekly jam sessions for **60** members, exploring over **100** diverse orchestral compositions.

Projects Officer & Project Manager   **August 2023 – May 2025**
Aggie Data Science Club (ADSC)   *College Station, TX*

- Secured industry partnerships, increasing club funding by 30% and expanding project opportunities for members.
- Led the autonomous vehicle simulation project, improving navigation accuracy by 30%.
- Monitored and mentored 10+ data science projects per semester, resulting in a 90% completion rate.

Community Engagement

- Volunteer for TAMU's Department of Computer Science and Engineering C.S Career Fair.
- Musician for Baylor-Scott & White and St. Joesph's Health.
- TAMU Big Event volunteer in 2023, 2024, and 2025.